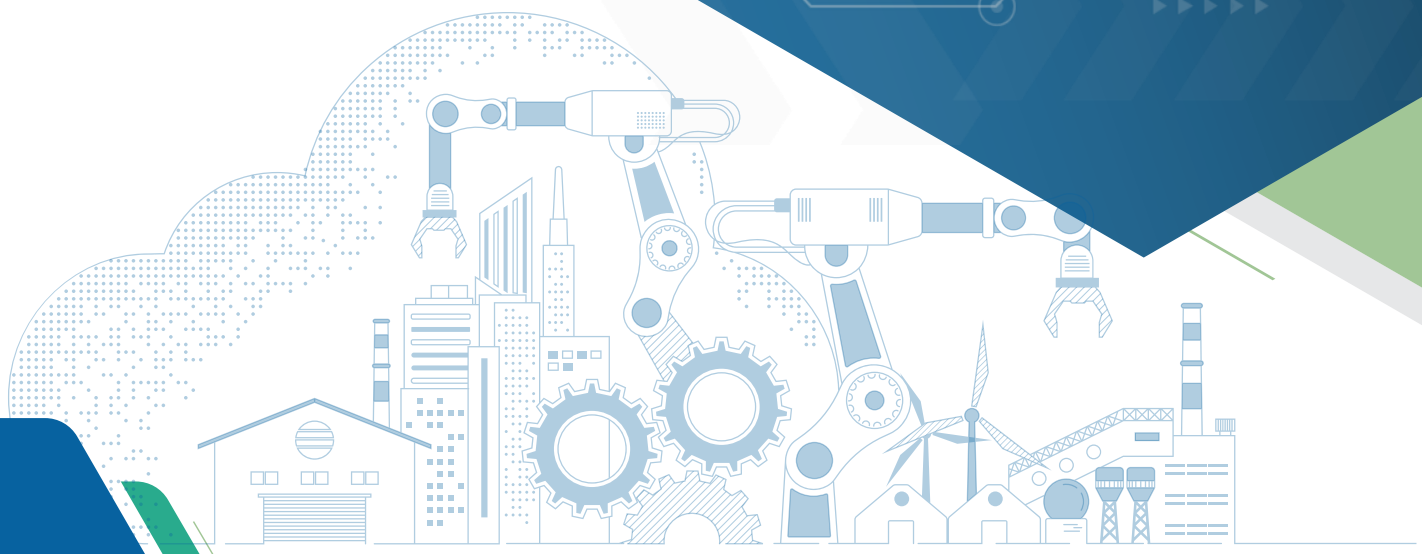
ITC INFOTECH

Business-friendly Solutions

Quality Insights @Edge

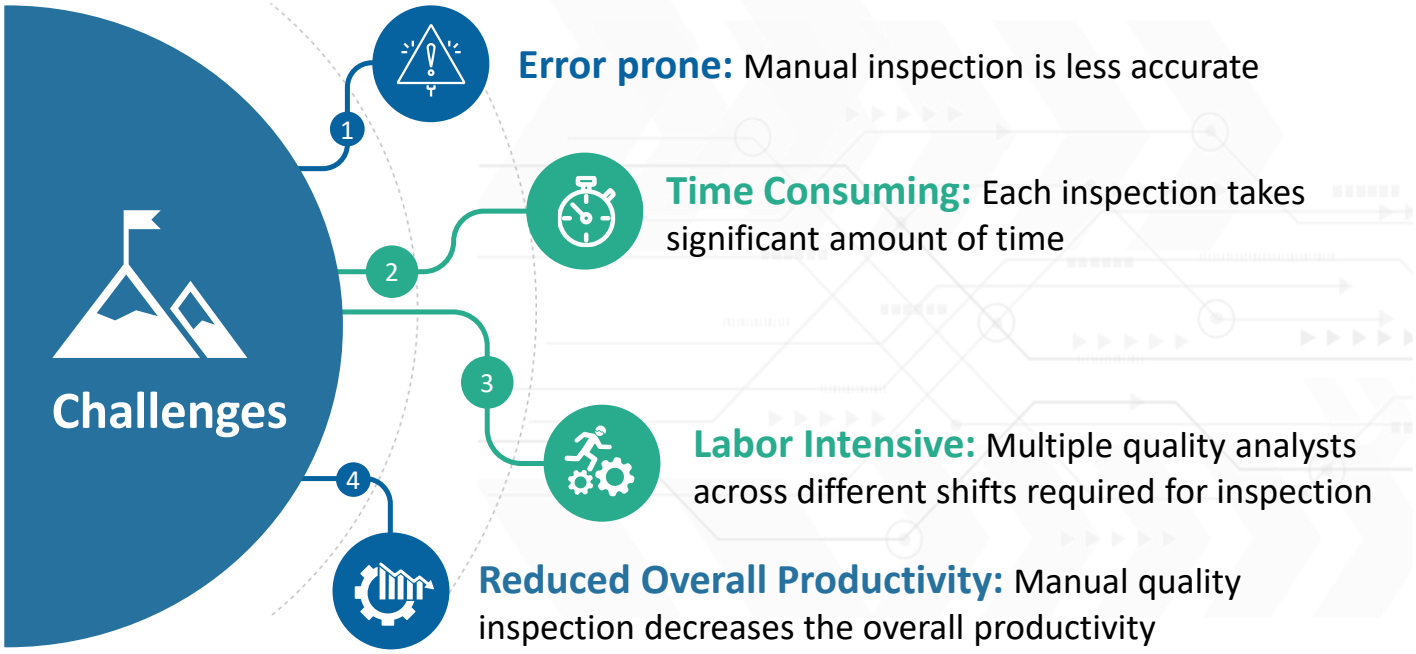


Overview

As connected devices proliferate and their capabilities expand, so does the need for real-time decision making untethered from cloud computing's latency, and from connectivity in some cases. This movement of computational capacity out of the cloud—to the edge—is opening a new sector: edge computing. The key advantage of analytics @Edge is to leverage the benefits of analyzing real-time data, without the bandwidth costs that come with sending that data to the cloud or the data center for analysis. Manufacturing is time-sensitive in terms of avoiding the production of out-of-spec components, equipment downtime, worker injury or death. For more complex, longer-term tasks data can be sent to the cloud or data lake for further analytics. Best use of Edge analytics is made in Quality Insights @Edge wherein manual inspection is replaced with digital inspection. It involves the visual inspection of products on the production line for the purpose of quality control. This solution can also be used for internal and external assessment of the various equipment in a production facility such as storage tanks, pressure vessels, piping, and other equipment. With analytics @Edge, more inspection points can be introduced on the production line, and this helps in better quality monitoring

Current Challenges of Manual Quality Inspection

There are multiple reasons why manual inspection can lead to inconsistency. The main ones are the difficulty to ensure that standard procedures are followed by multiple operators doing inspection, many manual steps, such as data transfer, and paper-based documentation.



The Solution

Quality Insights @Edge is the solution to provide image-based automatic inspection. It uses visual computing technology to mechanically 'see' the activities that take place along the production line. This solution replaces the manual inspection process by analyzing the captured images and sending them to the trained model which has the image dataset. The algorithms process images to adjust their quality, locate interesting points and regions, and finally decide the quality of the product based on the features found. MLOps ensures that an integrated ML system is built which can continuously operate in production.

Typical industry-wise products and associated defects which can be captured using Quality @Edge

Industry Vertical	Product	Defects
Automotive	Material parts, resin parts	Scratch, crack, dent, dirt
HiTech - Electronics	PCB, electrical components, panel	Scratch, crack, burr/chip
Manufacturing - Building	Wood board, metal fitting, tile	Scratch, surface, pattern, crack, dent
CPG - Food & Beverage	Processed food, beverage	Foreign object, wrong print, leak
Life Sciences	Medicine	Foreign object, wrong print, leak

Solution Features

Accelerated deployment

1

Pre-built models available aid in accelerated deployment of the solution

Intuitive UI

2

Intuitive UI of solution helps to easily train models with reference images

Continuous improvement

3

In-built machine learning algorithms helps in sharpening of the model as more and more images are scanned

Image re-orientation

4

Solution has the capability to re-orient the image if the object is not kept in the correct position and angle

Business Benefits

Increase of inspection accuracy by **5-10%**

Reduction of inspection cycle time by **15-20%**

Reduction of labor by **10-20%**

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